

ISO 14544:2025-01 (E)

Fine ceramics (advanced ceramics, advanced technical ceramics) - Mechanical properties of ceramic composites at high temperature - Determination of compressive properties

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Principle	3
5	Apparatus	4
5.1	Test machine	4
5.2	Load train	4
5.3	Gastight test chamber	4
5.4	Set-up for heating	5
5.5	Strain measurement	5
5.5.1	General	5
5.5.2	Strain gauges	5
5.5.3	Extensometer	5
5.6	Temperature measurement devices	6
5.7	Data recording system	6
5.8	Dimension measuring devices	7
6	Test specimens	7
6.1	General	7
6.2	Compression between platens	7
6.3	Test specimen used with grips	9
7	Test specimen preparation	11
7.1	Machining and preparation	11
7.2	Number of test specimens	12
8	Test procedures	12
8.1	Test set-up: temperature considerations	12
8.1.1	General	12
8.1.2	Controlled-temperature zone	12
8.1.3	Temperature calibration	12
8.2	Test set-up: other considerations	13
8.2.1	Displacement rate	13
8.2.2	Measurement of test-specimen dimensions	13
8.2.3	Buckling	13
8.3	Testing technique	14
8.3.1	Specimen mounting	14
8.3.2	Setting of extensometer	14
8.3.3	Setting of inert atmosphere	14
8.3.4	Heating of test specimen	14
8.3.5	Measurements	15
8.4	Test validity	15
9	Calculation of results	15
9.1	Test specimen origin	15
9.2	Compressive strength	15

9.3	Strain at maximum compressive force	16
9.4	Compressive modulus	16
9.4.1	Calculation of compressive modulus	16
9.4.2	Calculation of compressive modulus with linear behaviour at the origin	17
9.4.3	Calculation of compressive modulus with non-linear behaviour	17
10	Test report	17
11	Uncertainties	18
Annex A (informative) Illustration of compressive modulus		19
Annex B (informative) Calibration method of the test temperature using a cartographic specimen equipped with thermocouples		22
Bibliography		27